

## OXYGEN ANALYSER MODEL 4153



Compact and resistant, this probe is equipped with a strong protection tube made in extra pure sinterized recrystallized alumina.

The field of use of this sensor is extremely wide. It can be used in reheat furnaces, soaking pits, annealing furnaces, incinerators, glass melting tanks, ceramic furnaces, and in any combustion process, within the limits of established temperatures, on plants running either in positive or negative pressure.

The material used to manufacture this instrument i.e. zirconium oxide, alumina, and platinum render this probe practically unassailable from the most aggressive atmospheres at high temperature. The probe can be installed directly into the process through a 1 "NPT" thread into a predisposed 1 "NPT" female groove. If the plant is in positive pressure it is possible to install the probe into a hole of 40 mm sealing it with ceramic fiber mattres.

We can supply a flange of  $\varnothing$  125 or 150 mm, 3" and 4" 150 RF ANSI flanges in SS or carbon steel with a central hole having a 1 "NPT" female thread into which assemble the probe. On the external of the terminal head are fitted two 1/8" caps. One to send reference air to the cell; the other one to send into the space between the zirconia cell and the alumina protection tube, a gas with a known oxygen contents to check its perfect running and, if that is the case, to proceed to the calibration of the cell on the electronic monitor.

The following parameters should be taken into consideration for a correct use of these probes:

- Maximum and minimum temperature of the plant where the probe will be installed.
- Process pressure;
- Oxidizing or reducing atmosphere;

- Probe penetration: we recommend not to protrude the end of the sensor more than 100 mm from the internal side, if the plant runs in negative pressure; if positive there is no need to have the probe to protrude inside the chamber.
- Temperature of external wall: the terminal head must be kept below 150 °C, protection or cooling may be necessary.

## Connections

If the terminal head is placed a junction box for the electric connection of the signals from the electrolytic cell and from the thermocouple, with normal copper conductors without particular limits of length if the probe is provided with the standard B type thermocouple. On the external side of the terminal head are placed the 1/8" fittings for adduction of reference air, and for the calibration gas.

For other types of thermocouples (available as optional) it is absolutely necessary to use suitable compensated cables.

## Technical specifications

- Accuracy: 1% of the theoretical value or 0,1% O<sub>2</sub> (whichever is greater) if used with Fer Strumenti transmitters.
- Stability: within 1% for the life time of the sensor.
- Operating temperature: for the sensing element minimum 500 °C, maximum 1600 °C. For the terminal head: maximum 150 °C.
- Response time: Initial less than 1 second.
- Thermocouple: type B (platinum/6% rhodium - platinum/30% rhodium) standard
- Outputs-Sensor: E.M.F. function of the oxygen concentration. Thermocouple: E.M.F. function of the temperature.
- Reference air: clean ambient air (flow between 50 and 200 cc/minute).
- Optional: thermocouples types R. K. S. in alternative to type B standard.

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FER STRUMENTI S.r.l. reserves the right, without any notice, to make any modifications needed for improving the product.

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